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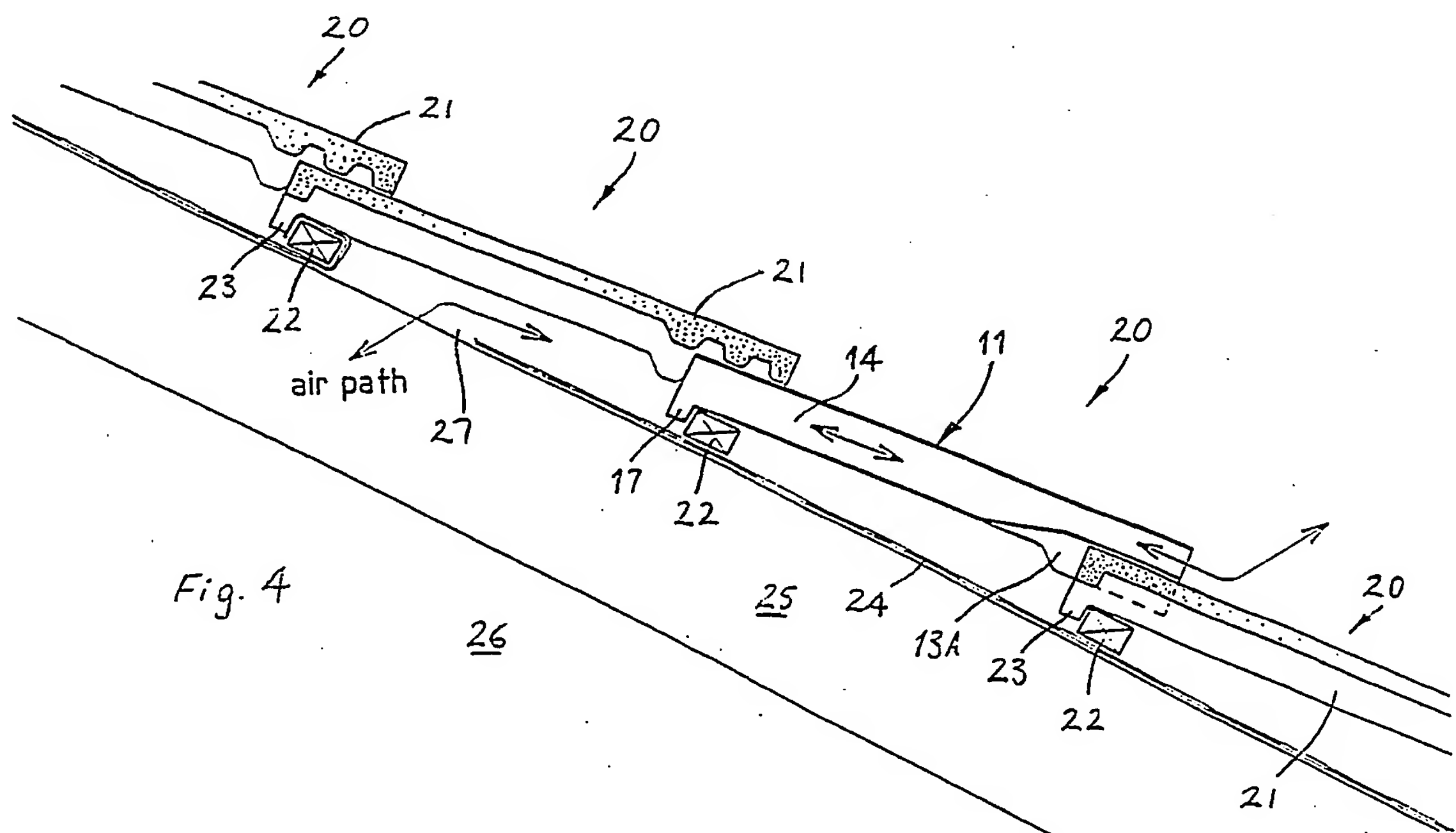
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**(54) Roof ventilating tile**

(57) A roof ventilating tile (11) for pitched, tiled roofs is of the same shape and size as a conventional roof tile (21) and defines within its thickness a through duct (14) which opens only at opposite ends of the tile, the tile (11) being adapted to be used in a roof in place of a roof tile (21) in a course (20) of roof tiles and to be flush with the roof tiles (21) in that course. The tile (11) is intended to be laid so that the duct (14) is open to the exterior at the lower end of the tile which overlaps the subjacent course (20) of roof tiles (21) and is open to the interior (26) of the roof at the upper end of the tile which is overlapped by the superjacent course (20) of roof tiles.



This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1990.

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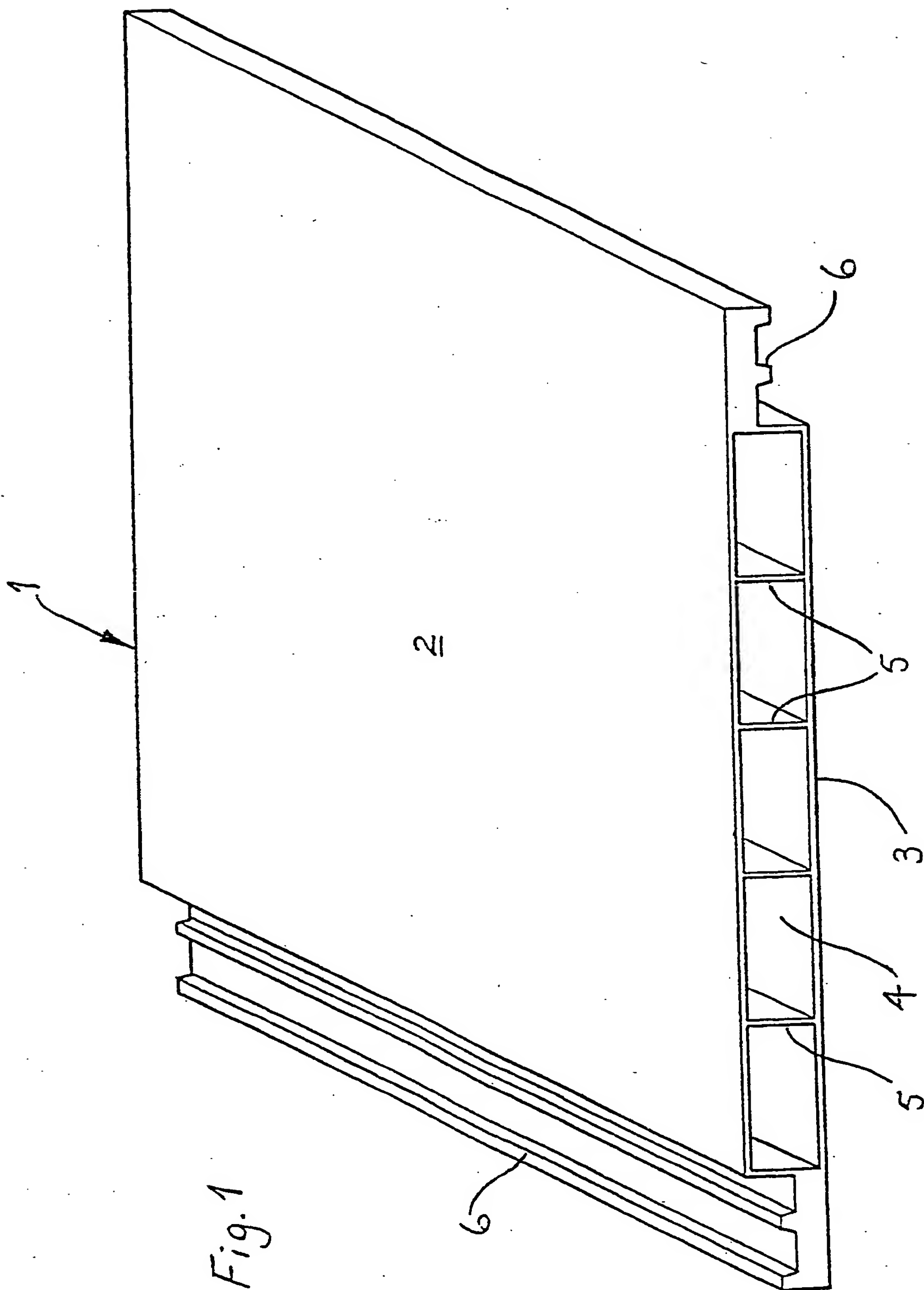


Fig. 1

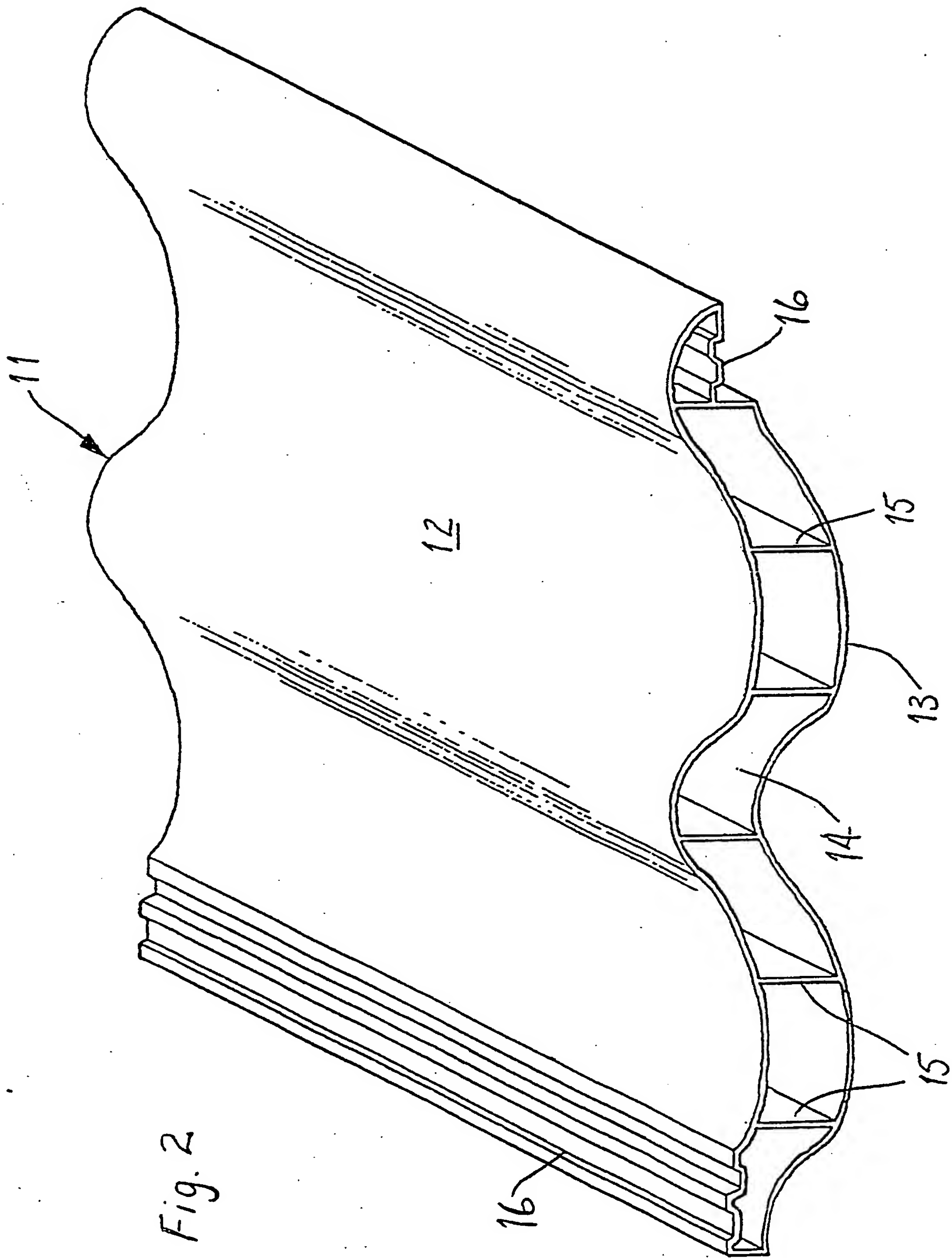
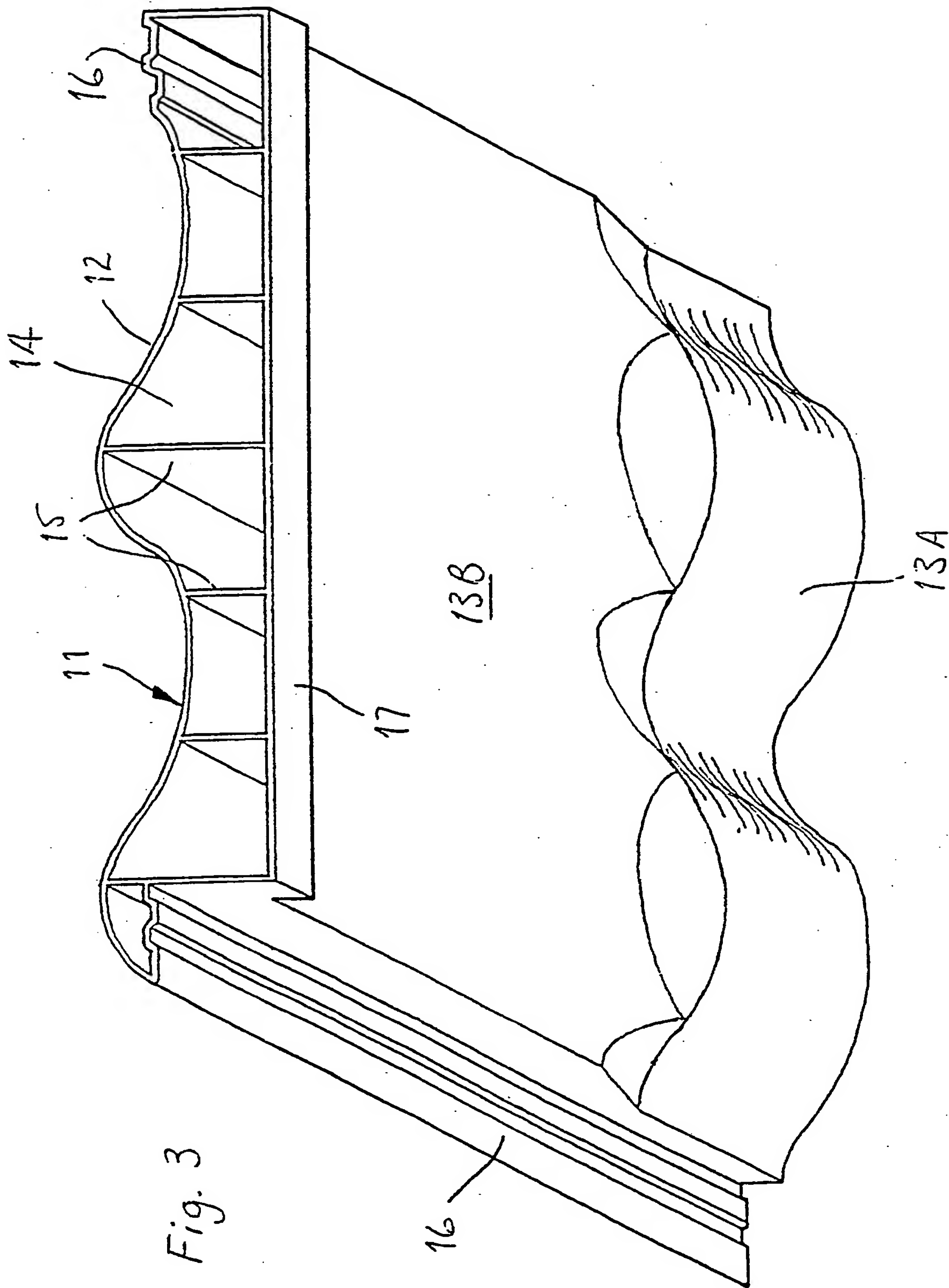


Fig. 2



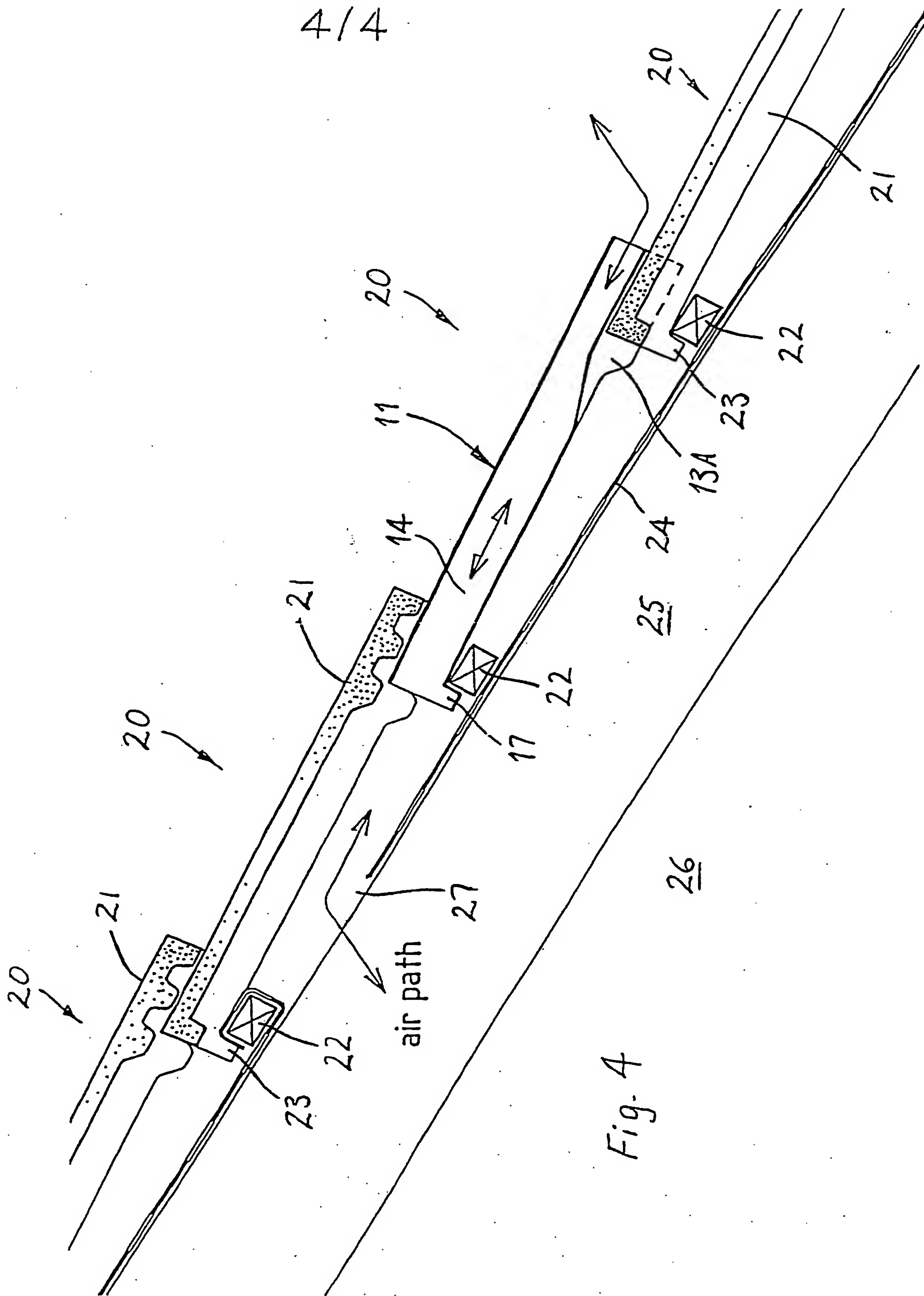


Fig. 4

Roof ventilating tile

The present invention relates to roof ventilating tiles and is particularly concerned with a ventilating tile for pitched, tiled roofs.

It is known to ventilate a roof space of a pitched, tiled roof by means of a ventilating tile which is used in place of at least one roof tile in a course or row of roof tiles and has an aperture for defining an air-flow path between the outside and the roof space through a gap or hole in the roof decking or roofing felt beneath the tiles. The aperture in the ventilating tile may be covered by a cowl or hood, as disclosed in GB-A-2157738, GB-A-2027469 and EP-A-0063218, to prevent the ingress of rain or snow but such a cowl or hood projects from the plane of the upper surface of the tile, and hence above the plane of the course of roof tiles in use, and can spoil the appearance of the roof.

GB-A-2199860 and EP-A-0117187 disclose an alternative type of ventilating tile which lacks a cowl or hood over the aperture so that the upper surface of the tile is more or less flush with the plane of the course of roof tiles in use. This type of tile has a lower part defining a chamber or duct below the plane of the roof, into which the aperture opens and which in its turn opens into the roof space. In order to prevent the ingress of rainwater to the roof space, the chamber or duct has baffle means between the aperture and the opening to the roof space and an outlet through which water entering the chamber or duct can drain back to the exterior of the roof. This type of ventilating tile preserves the appearance of the roof but has a

fairly complex structure.

The object of the present invention is to provide a roof ventilating tile which can be laid flush or substantially flush with the plane of a course of roof tiles in a pitched roof in use and which has a simple structure.

According to the present invention, there is provided a roof ventilating tile for pitched, tiled roofs, in which the ventilating tile is of the same, or substantially the same, shape and size as a roof tile and defines within its thickness a through duct which opens only at opposite ends of the tile, the ventilating tile being adapted to be used in a roof in place of a roof tile in a course of roof tiles and to be laid so that the duct is open to the exterior at the lower end of the tile which overlaps the subjacent course of roof tiles and is open to the interior of the roof at the upper end of the tile which is overlapped by the superjacent course of roof tiles.

The ventilating tile of the present invention can therefore be used in place of an ordinary roof tile and is distinguishable from the adjacent roof tiles only by virtue of the opening of the duct in the visible, exterior end of the tile. The tile of the invention is suitable for new and existing roofs and requires only that a hole be made in the roof decking or felt adjacent the opening of the duct at the upper end of the tile. The tile can be secured to a batten adjacent its upper end in the same way as the adjacent roof tiles, the hole in the decking or felt being made above the level of the batten.

The ventilating tile of the invention may be made with a profile to match any shape of roof tile, such as plain, contoured, curved or corrugated roof tiles, and may have formations along opposite side edges for interengagement or cooperation with complementary formations on the adjacent roof tiles in the course to effect the edgewise connection or interlocking of the tiles in a conventional manner.

Preferably, the duct and its openings extend across substantially the entire width and thickness of the tile or at least across a greater part thereof but they may be of restricted width and/or height within the tile or the width and/or height of the duct may vary from one end of the tile to the other in dependence on the air-flow to be achieved through the duct.

The tile may have at least one reinforcing web which extends longitudinally of the duct between the opposing portions of the tile which define its upper and lower surfaces in use. In the preferred embodiment, in which the duct extends across substantially the entire width of the tile, the tile has a plurality of such reinforcing webs equally spaced apart in the duct and dividing it longitudinally into passages.

It is envisaged that the length of the tile and its inclination in its normal mode of use will together suffice to prevent rainwater or moisture from being blown through the duct into the roof space. If necessary, however, the internal surface of that portion of the tile defining its lower surface in use may be provided with a ridge or like barrier formation which extends transverse the duct to obstruct the flow of water therealong. In a conventional manner, the



duct may also have an insect grille.

The ventilating tile may be made from a plastics material, such as polycarbonate, polyvinyl chloride, polyethylene, polypropylene or polystyrene, and may, for example, be extruded in one piece or formed from twin-wall sheeting. Alternatively, the tile may be formed by the gluing or joining together of a vacuum-formed plastics sheet which defines the upper surface of the tile and a ducting piece which defines the sides of the duct, the webs if present, and the lower surface of the tile. As a further alternative, the portions of the tile defining its upper and lower surfaces may be made by vacuum-forming or injection moulding so that together they define the duct.

The present invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a roof ventilating tile according to a first embodiment of the invention;

Figure 2 is a perspective view of a roof ventilating tile according to a second embodiment of the invention;

Figure 3 is an overturned perspective view of the tile of Figure 2, and

Figure 4 is a cross-section of part of a pitched roof structure incorporating the ventilating tile of Figures 2 and 3.

With reference to Figure 1, a roof ventilating tile 1 according to a first embodiment of the invention has the profile and same overall dimensions as a plain roof

tile. The tile 1 has two opposed, parallel, flat portions 2, 3 forming its upper and lower surfaces in use and defining between them a through duct 4 which opens only at opposite ends of the tile 1. The duct 4 and its openings extend across substantially the entire width and thickness of the tile 1 but are divided longitudinally by a plurality of equally-spaced, parallel reinforcing webs 5 which extend between the flat portions 2, 3.

The tile 1 has interlock formations 6 along its opposite side edges for connection with complementary formations of adjacent roof tiles in use. In addition, a downstand (not shown) projects from the lower flat portion 3 at that end of the tile 1 which is its upper end in use (shown at the top in Figure 1) for engagement with a batten in the manner of the nibs of a conventional roof tile.

Figures 2 and 3 show a roof ventilating tile 11 according to a second embodiment of the invention. This tile 11 has the general profile and same overall dimensions as a contoured or corrugated roof tile and, in the same manner as the tile 1 of Figure 1, is formed by two opposed portions 12, 13 which form its upper and lower surfaces in use and define a through duct 14. The portions 12, 13 are joined by a plurality of equally-spaced, parallel reinforcing webs 15 which extend longitudinally of the duct 14 between its openings at opposite ends of the tile 11.

The portion 12 which forms the upper surface of the tile 11 in use has a corrugated or contoured profile for its entire length in the same way as the roof tile it is intended to mimic. The portion 13, however, has

a corrugated or contoured profile only for that part 13A of its length corresponding to the headlap portion of a roof tile to be overlapped by the tile 11 in use so as to be complementary thereto. The remaining part 13B of the portion 13 is flat and terminates in a transverse downstand 17 at the end of the tile 11 which is its upper end in use.

The opposite side edges of the tile 11 have interlock formations 16 in a similar manner to the tile 1 of Figure 1.

The ducts 4, 14 of both tiles 1, 11 may include insect grilles (not shown) of conventional type for restricting the ingress of insects and small birds.

Figure 4 shows a part of a pitched roof structure incorporating the roof ventilating tile 11 of Figures 2 and 3.

The roof structure has several overlapping courses 20 of roof tiles 21 and the tiles 21 of each course are secured to a respective batten 22 by means of nibs 23 in correspondence with their headlap portions. A layer of roofing felt 24 is interposed between the battens 22 and the rafters 25, only one of which is shown in Figure 4.

The ventilating tile 11 takes the place of one roof tile in one of the courses 20 and is laid so that its downstand 17 engages the respective batten 22 in the same manner as the nibs 23 of the roof tiles. The profiled part 13A on the underside of the tile 11 at one end overlaps the headlap portion of a roof tile 21 in the course 21 immediately below and the other end of

the tile 11 is overlapped by a roof tile 21 in the course immediately above, in the same way as the roof tiles themselves. The duct 14 thus opens to the exterior at the downslope or lower end of the tile 11 and opens into the roof space 26 at the upper end through a gap 27 made in the felt 24 just below the batten 22 of the overlying course of roof tiles. An air-flow path between the exterior and the roof space 26 is thus established, as shown by the arrows in Figure 4. The length of the tile 11, and hence of the duct 14, and its inclination on the roof effectively prevent rainwater and moisture from being blown into the roof space 26 through the duct.

The mode of use of the ventilating tile 1 of Figure 1 is analogous to that described above.

The tiles 1, 11 are made by the gluing of polycarbonate sheeting which forms the respective portions 2, 12 (and is vacuum-formed with the appropriate profile in the case of the portion 12) to profiled polycarbonate ducting pieces which define the respective portions 3, 13, the ducts 4, 14 and the webs 5, 15. Alternatively, the respective portions 2, 3, 12, 13 may be made by vacuum-forming or injection moulding so that together they define the respective ducts 4, 14. The interlock formations 6, 16 on the two sides of each tile may both be formed on the sheeting or the ducting piece or may be formed one on the sheeting and one on the ducting piece.

The use of polycarbonate or other suitable plastics materials means that a tile 1, 11 of relatively high strength can be produced with portions 2, 3 or 12, 13 and webs 5, 15 (if present) of minimum thickness,

allowing the dimensions of the duct 4, 14 in the tile to be maximised such that, for optimum air-flow, the duct may even occupy substantially the entire width and thickness of the tile, as illustrated. This would not be possible with conventional clay or concrete tiles.

The ventilating tile of the invention may, for example, be 22 mm thick when it is to be used with concrete roof tiles and 10 mm thick when it is to be used with plain, clay roof tiles.

Essentially then, the ventilating tile according to the invention is of a shape and size such that it can simply take the place of an ordinary roof tile in a new or existing roof and be distinguished from the surrounding roof tiles only by virtue of the opening of the duct in the visible, exterior end of the tile. The tile of the invention thus lacks a cowl or hood which projects above the plane of the course of roof tiles in which it is laid and, by virtue of the through duct which extends between the opposite ends of the tile, has a relatively simple structure.

It will be appreciated, however, that in some embodiments the tile of the invention may be in multiple form, that is, wide enough to take the place of, for example, two or three adjacent roof tiles in a course, the portion which defines its upper surface in use being suitably profiled to imitate the joins between the roof tiles.

A ventilating tile employing the same principle as described herein can be envisaged for use in a slate roof but the narrowness of the duct in such a tile would probably render the tile ineffective without some

form of forced ventilation or the use of a large number of such tiles in a roof.

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CLAIMS

1. A roof ventilating tile for pitched, tiled roofs, in which the ventilating tile is of the same, or substantially the same, shape and size as a roof tile and defines within its thickness a through duct which opens only at opposite ends of the tile, the ventilating tile being adapted to be used in a roof in place of a roof tile in a course of roof tiles and to be laid so that the duct is open to the exterior at the lower end of the tile which overlaps the subjacent course of roof tiles and is open to the interior of the roof at the upper end of the tile which is overlapped by the superjacent course of roof tiles.

2. A ventilating tile as claimed in Claim 1, in which it has formations along opposite side edges for interengagement or cooperation with complementary formations on the adjacent roof tiles in the course to effect the edgewise connection or interlocking of the tiles.

3. A ventilating tile as claimed in Claim 1 or Claim 2, in which it is made from plastics material.

4. A ventilating tile as claimed in any one of the preceding claims, in which the duct and its openings extend across substantially the entire width and thickness of the tile or at least across a greater part thereof.

5. A ventilating tile as claimed in any one of the preceding claims, having at least one reinforcing web which extends longitudinally of the duct between the opposing portions of the tile which define its upper and lower surfaces in use.

6. A ventilating tile as claimed in Claim 5 when dependent on Claim 4, in which the tile has a plurality of reinforcing webs equally spaced apart in the duct and dividing it longitudinally into passages.

7. A ventilating tile as claimed in any one of the preceding claims, in which a downstand projects from one end of one surface of the tile, which is intended to be the upper end of its lower surface in use, for engagement with a roof batten.

8. A roof ventilating tile substantially as herein described with reference to, and as shown in, the accompanying drawings.



Patents Act 1977  
Examiner's report to the Comptroller under  
Section 17 (The Search Report)

Application number

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Relevant Technical fields

(i) UK Cl (Edition K ) E1D DF124

(ii) Int Cl (Edition 5 ) E04D

Search Examiner

J D CANTRELL

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

7.1.93

Documents considered relevant following a search in respect of claims

1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages 13	Relevant to claim(s)

### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

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